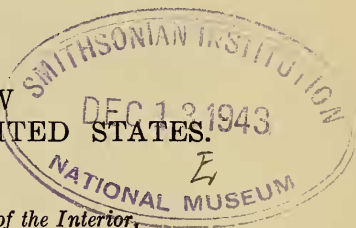


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A NEW FOX SPARROW
FROM THE NORTHWESTERN UNITED STATES.

BY JOHN W. ALDRICH,

*Fish and Wildlife Service, U. S. Department of the Interior,
Washington, D. C.*



Current investigations reveal the existence of a new subspecies of fox sparrow in the northwestern United States and southwestern Canada, which I propose to call:

Passerella iliaca olivacea new subspecies
WASHINGTON FOX SPARROW.

Type.—Adult ♂, U. S. National Museum No. 270664 (Biological Surveys Collection); Reflection Lake, Mount Rainier, Washington, altitude 4,900 feet; July 18, 1919; Walter P. Taylor; original number 478.

Subspecific characters.—Similar to *Passerella iliaca schistacea* of Wyoming, but darker and more olivaceous; above dark hair brown to olive brown (of Ridgeway), instead of light hair brown to light olive brown; edges of wing and tail feathers, and upper tail coverts Brussels brown to Argus brown, instead of cinnamon brown. Similar also to *P. i. fulva*, of central southern Oregon, but more brownish; above dark hair brown to olive brown, instead of mouse gray to hair brown; edges of wing and tail features, and upper tail coverts more rufescent, Brussels brown to Argus brown, instead of cinnamon brown to Prout's brown; bill shorter and more slender.

Measurements.—Adult male (9 breeding specimens from Washington and northeastern Oregon); wing, 80.0-83.5 (81.5) mm.; tail, 77.5-82.0 (80.1); exposed culmen, 10.5-12.0 (11.2); tarsus, 23.5-25.5 (24.3); middle toe without claw, 14.0-15.0 (14.7). Adult female (5 breeding specimens from Washington and southern British Columbia): wing, 75.0-80.0 (77.1); tail, 71.0-81.5 (75.9); exposed culmen, 11.0-12.0 (11.5); tarsus, 23.0-24.0 (23.7); middle toe without claw, 14.0-15.0 (14.4).

For the sake of comparison following are the measurements of *P. i. fulva*: Adult male (13 breeding specimens from Lake County, Oregon): wing, 77.5-84.0 (80.9) mm.; tail, 76.5-87.0 (81.3); exposed culmen, 11.0-13.0 (12.4); tarsus, 24.0-26.0 (24.8); middle toe without claw,

14.3-16.0 (15.3). Adult female (7 breeding specimens from Lake County, Oregon): wing, 76.0-82.0 (78.9); tail, 75.0-83.0 (78.8); exposed culmen, 11.0-13.0 (11.9); tarsus, 23.5-26.0 (24.6); middle toe without claw, 14.0-15.5 (14.7).

Distribution.—Breeds chiefly in the shrub and early tree stages (especially stream-bordering willow thickets) of succession to the subalpine forest in the Canadian Life Zone, also in the stunted tree growth at the junction line between this forest climax and the tundra climax of the Arctic-Alpine Life Zone. Less commonly it breeds in shrub stages of the montane forest climax of the Transition Life Zone. It is distributed geographically from the east slopes of the Cascade Mountains of Washington, eastward at least to the Blue Mountains of Washington and Oregon, the mountains of northeastern Washington, and probably to northern Idaho and northwestern Montana; northward in southern British Columbia at least to Nelson. The winter home of this race has not been determined, but migrant specimens have been identified from: Wyoming, Stanley, August 23, Kemmerer, May 16; Nevada, Ruby Mountains, August 18; Oregon, Hart Mountain, September 14; and California, Beswich, September 19.

Remarks.—Progressing away from the Cascade Mountains of west central Washington, the center of differentiation of *olivacea*, we find it intergrading with *schistacea*, in the vicinity of the Columbia River gap. A juvenal specimen from 10 miles north of Grand Dalles, Washington, near the Columbia River, is identifiable as *olivacea*. On the other hand specimens from the Cascade Mountains of Jefferson County, in northern Oregon, in color are indistinguishable from *schistacea*. A short distance farther to the south, at Bend, in Deschutes County, Oregon, we find the northern limit of the range of *fulva*. It does not seem logical to consider part of the Cascade Mountains within the range of the essentially Great Basin race, *schistacea*, but for the time being there seems to be no other course possible.

Specimens from Harney County, Oregon (Steens Mountains and Burns) are intermediate between *fulva* and *schistacea*, and were referred to the former race by Swarth (1920:159), and Miller (1941:263, map). On the basis of my material, however, birds from these localities, as well as a specimen from Howard and another from 20 miles southeast of Prineville, Crook County, Oregon, seem referable to *schistacea*. They definitely do not approach *olivacea*, which race apparently breeds no farther south than the Blue Mountains of Oregon. Specimens from the Blue Mountains and northward have been identified as *olivacea*, while examples from southeast of the Blue Mountains (Enterprise, Oregon) are nearer *schistacea*.

To the northward *olivacea* intergrades in some unknown region of southern British Columbia with the more rufescent *altivagans*, that has its center of differentiation in the Canadian Rockies. Probably most of the British Columbia specimens that in recent years have been identified as *schistacea* are referable to *olivacea*. As Swarth (1920:122) has pointed out, a juvenal specimen, taken by E. A. Preble at Thutade Lake,

at the source of the Finley River, British Columbia, is like topotypes of *altivagans*, from Moose Branch of the Smoky River, Alberta. On the other hand an adult in fresh autumn plumage, taken September 9, 25 miles southeast of Thutade Lake, and an adult that has almost completed the moult into autumn plumage, taken August 14, 15 miles west of Babine, British Columbia, are darker and more grayish than typical *altivagans*, and somewhat approach *olivacea*. These specimens undoubtedly represent the variant mentioned by Swarth (1920:123, and 1924:357) as intermediate between *altivagans* and the "*unalaschcensis* group" of subspecies. Further collecting of breeding fox sparrows in central British Columbia may convince us of the desirability of recognizing a distinct race there. A single breeding specimen from Buck Creek Pass, Snohomish County, Washington, stands out as distinct from typical *olivacea* by virtue of more brownish coloration and could represent a southern outpost of an interior British Columbia race. For the time being, however, the Snohomish County bird is placed with *olivacea*.

The possible eastward extension of the range of *olivacea* to northern Idaho and northwestern Montana, although no specimens have been seen from these regions, is suspected on the grounds that ecologically these regions are more closely related to the moister forests of northern Washington than to the more arid mountains of the Great Basin, the differentiation center of *schistacea*. Supporting evidence is found in specimens from southern Idaho and southern Montana which, although averaging nearer to *schistacea*, show in some specimens an approach to *olivacea*. As the geographic variation of North American birds becomes more completely analyzed it is becoming more and more apparent that the geographical area above delimited as the range of *P. i. olivacea* may be considered a unit that is a center of racial differentiation in birds. In some species there are two types of variants, separated more or less completely by the intrusion of the relatively arid Okanagan Valley, while in others there is uniformity with a connection across southern British Columbia. This is the area that, in its Transition Life Zone, is characterized by the Larch-Pine Association of Weaver and Clements (1938: 503). A similar unity, in this area, of the Canadian Life Zone subalpine forest has not yet been pointed out by ecologists. Nevertheless it seems probable that more critical study of this area in the future will show that qualitatively and quantitatively the major biotic communities of the Canadian Zone in this area as a unit are distinct from equivalent subalpine forest communities in either the Great Basin to the south or the main range of the Rocky Mountains to the east.

The conclusions in the present paper are based on specimens in the collections of the U. S. Fish and Wildlife Service (Biological Surveys), the University of Washington, Dr. Ira N. Gabrielson, and Stanley G. Jewett. Information on ecological requirements of fox sparrows in Washington was obtained from the literature and field notes, especially of Dr. Walter P. Taylor and George G. Cantwell, in the files of the U. S. Fish and Wildlife Service.

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